

Historic, archived document

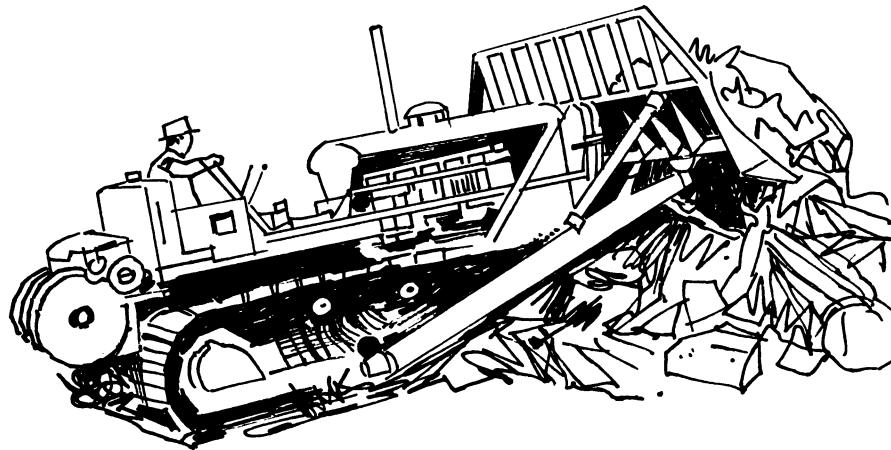
Do not assume content reflects current scientific knowledge, policies, or practices.

1984F
Top. 2

U. S. DEPT. OF AGRICULTURE
LIBRARY
NOV 16 1961
CURRENT SERIAL RECORDS



Equipment for clearing brush from land



Farmers' Bulletin No. 2180 [1961]

U.S. DEPARTMENT OF AGRICULTURE

CONTENTS

| | Page |
|-----------------------------|------|
| Small brush----- | 3 |
| Small areas----- | 3 |
| Medium areas----- | 3 |
| Large areas----- | 6 |
| Medium brush----- | 6 |
| Small areas----- | 6 |
| Medium areas----- | 7 |
| Large areas----- | 8 |
| Large brush----- | 8 |
| Small areas----- | 9 |
| Medium and large areas----- | 10 |
| Burning stumps----- | 10 |



Growth Through Agricultural Progress

*Prepared by Agricultural Engineering Research Division,
Agricultural Research Service*

This bulletin supersedes Farmers' Bulletin 1526, "Clearing Land of
Brush and Stumps."

Washington, D.C.

Issued October 1961

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 10 cents

EQUIPMENT FOR CLEARING BRUSH FROM LAND

A major consideration in any brush-clearing operation is selection of proper equipment. To be efficient, equipment must be suited to the job.

This bulletin describes some common types of equipment used to clear brush—small, medium, or large—from areas of various sizes.

SMALL BRUSH

Small brush is woody growth having stems that do not exceed 2 inches in diameter. Equipment and methods used to clear small brush depend on the size of the area—small, medium, or large.

Small Areas

Handtools or wheel-mounted circular saws are adequate for small jobs. The common method of removal is to cut, pile, and burn brush.

Axes.—Single- or double-bitted axes can be used to cut top growth. They can also be used as an aid in grubbing roots. Axes must be kept properly sharpened. When using an ax, never chop into the ground. Make sure no branches interfere with your swing.

Machetes.—Machetes can be used to cut stems or branches. They can be sharpened with a whetstone.

Brush hooks.—Brush hooks are useful in cutting the stems of growth. The brush hook is swung like a scythe. It is sharpened by grinding with an abrasive wheel.

Grub hoes and mattocks.—These tools can be used to chop off brush near ground level or to dig out small tap roots.

Wheel-mounted circular saws.—These saws are fast and effective in cutting top growth. Their use is not recommended on steep slopes.

Medium Areas

Where size of the area rules out efficient use of hand tools or wheel-mounted circular saws, wheel tractors and auxiliary attachments can be used to cut and pile brush, shred it, or plow it under.

Moldboard plows.—Tractor-drawn or tractor-mounted moldboard plows can be used to turn and cover small brush if the soil is not excessively hard, sticky, or rocky.

Plows with heavy-duty frames are recommended for brush with thick stems. Plows with light frames should be used only on the smallest sprout- and seedling-type growth to avoid damage to the plow frame.

For easier plowing, adjust the

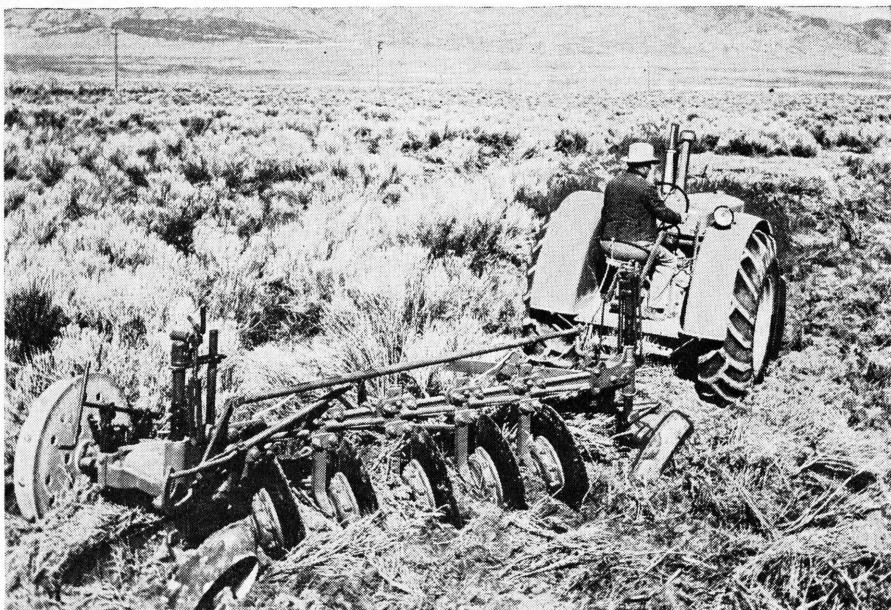


Figure 1.—Disk plows can be used to plow down small brush or to plow under large brush that has been mowed or shredded.

plow hitch for plowing below root crowns. Keep plowshares sharpened.

Remove jointers and colters; they are of little use in plowing brush and they may become damaged.

Covering wires are helpful in guiding trash under the turning furrow slice.

Moldboard plows also can be used to plow under mowed or shredded brush.

After an area has been worked by moldboard plows, it should be sown to a forage crop that will not require plowing for 3 years. If this is done, the woody material will rot and be less of a problem in the second plowing.

Disk plows.—Tractor-drawn standard or vertical disk plows can be used to plow down standing

small brush (fig. 1) or to plow under small brush that has been mowed or shredded.

Disk plows do not do as thorough a job of covering brush as moldboard plows, but they can be used on soil that is dry, hard, sticky, or rocky; moldboard plows cannot.

Rotary mowers.—Tractor rotary mowers, similar to rotary lawnmowers, will cut and shred brush up to 4 inches in stem diameter (fig. 2). Their use is not recommended for hilly or rocky land.

Flail-type rotary cutters.—These tractor-drawn machines have cutting knives that rotate around a horizontal shaft to knock down and shred small brush. They are available in a wide range of sizes as power-takeoff units. The small size

can be used with a wheel tractor. Larger sizes must be used with crawler tractors.

Some farmers use the chopper unit from flail-type forage harvesters as a substitute for the regular flail-type rotary cutter; only a few modifications are necessary (see fig. 3).

Sickle mowers.—Regular farm-tractor mowers can be adapted for cutting small brush by substituting a shorter cutter bar, stub guards, and heavier sections. Ground speed is not as fast for this type of mower as for rotary mowers, but an experienced operator can keep a sickle mower in continuous operation through fairly dense growths of brush with stems ranging up to $1\frac{1}{2}$ inches in diameter. To cut stems

PLAY IT SAFE!

Land clearing is a hazardous job.
Help prevent accidents by keeping your equipment in good repair and by using it properly.

larger than $1\frac{1}{2}$ inches in diameter, you must stop the tractor with the cutter bar pressing against the brush and allow the sickle to hit the stems several times. Cut brush can be left on the ground to rot, raked up and burned, or turned under with a plow.

Rolling brush cutters.—Wheel-tractor-towed rolling brush cutters will knock down small brush, chop it into small pieces, and work part of the chopped material into the

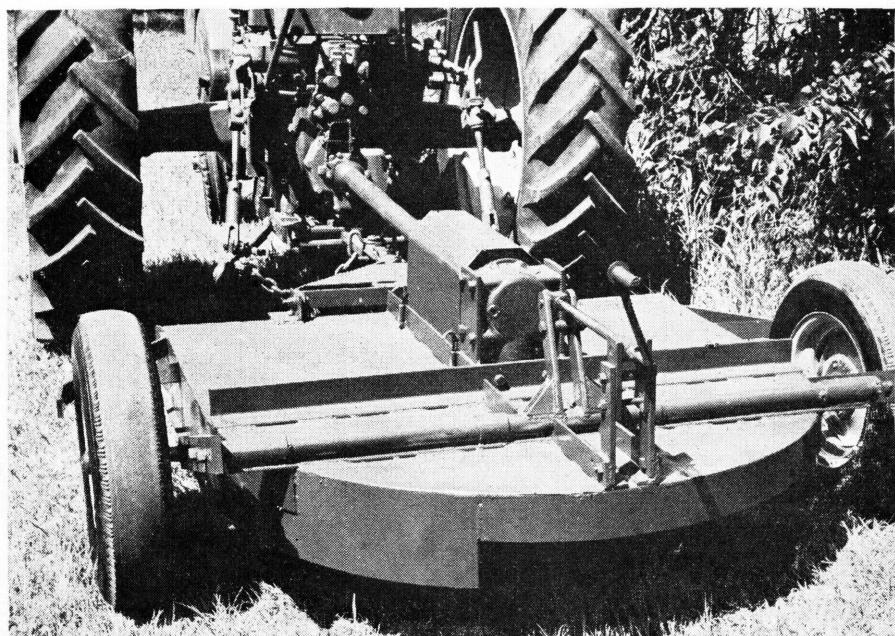


Figure 2.—Rotary mowers are useful in cutting brush up to 4 inches in stem diameter on level, rock-free land.



Figure 3.—Forage harvester adapted for cutting light brush. The cover of the cutting unit has been removed. The chopped material drops on the ground instead of going into the blower and spout.

soil. The residue can be left on the ground to rot or it can be raked, piled, and burned.

Sweep rakes.—Tractor-mounted sweep rakes can be used to rake felled brush into piles for burning. They are used as followup equipment to mowers and beaters.

Large Areas

Figure 4 shows some crawler-tractor attachments used to clear small brush from large areas. Cus-

tom operators are usually hired to furnish and operate this equipment.

MEDIUM BRUSH

Medium brush is woody growth most of whose stems range from 2 to 8 inches in diameter. Equipment used to remove medium brush depends on the size of the area to be cleared.

Small Areas

Hand tools—axes, crosscut saws, and power chain saws (fig. 5)—or tractor-mounted circular saws can be used to cut top growth to ground level. Stumps may be left to rot or may be pulled out.

If you pull out stumps with a tractor, hook the pull line to the

BRUSH BURNING

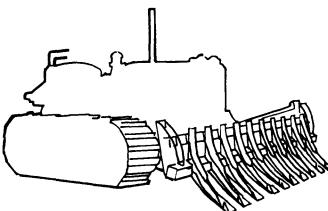
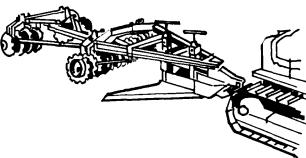
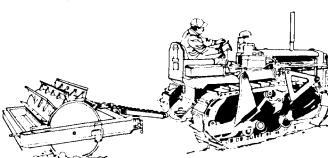
Burning is not recommended as a land-clearing method because it usually does an incomplete job and may damage the soil.

tractor's drawbar; otherwise you may damage your tractor or even cause it to rear over backward. Protect tractor operator and bystanders from dangerous backlash in case the pull line breaks.

Medium Areas

You can clear medium brush from medium areas with heavy-duty power chain saws, with tractor-mounted circular saws, or with

Figure 4.—Some attachments used with crawler tractors to clear small brush from large areas.

| Attachment | Features | Use |
|--|---|---|
|  | Curved teeth that travel above or below the ground surface | Uprooting small brush. Raking and piling cut brush |
|  | V-plane slices through ground at any set depth ranging from 2 to 8 inches. Disk chops up growth | Uprooting growth up to 6 inches in stem diameter |
|  | Rolling drum with cutting blades. (Style of blades differs on some models) | Knocking down and chopping dense brush up to 5 inches in stem diameter |
|  | Cutting blades attached to revolving horizontal shaft by rotating bushings or free-swinging chains. The shaft is driven by power takeoff from tractor | Knocking down, crushing, and shredding bushy type growth |
|  | Anchor chain or steel cable towed by two tractors | Uprooting growth. Two passes must be made: the first bends the brush, the second uproots it |

crawler tractors and their specialized attachments.

Heavy duty power chain saws.—These saws can be used to fell top growth on land that is to be used for pasture. Brush should be cut off as near to the ground as possible so the area can later be mowed.

Power chain saws can also be used to cut fallen brush into sizes easy to move to the burning pile.

Wheel-tractor-mounted circular saws.—These saws are used similarly to heavy-duty power chain saws. They are not efficient on hilly land.

Crawler tractors and attachments.—Many variations of crawler-tractor attachments are available for brush clearing. Some types can be used to shear off brush at ground level

and then to pile brush for burning. Other types can be used to uproot brush and push it to the burning pile.

Figure 6 describes some of this equipment.

Large Areas

To clear large areas of medium brush, use the same type of crawler tractors and attachments recommended for medium areas.

LARGE BRUSH

Large brush is woody growth having a high percentage of full-grown trees, 8 inches in diameter or larger. Equipment and methods used to clear large brush vary with size of the area to be cleared.



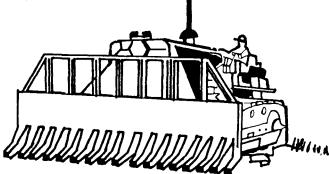
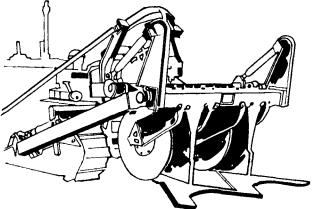
Figure 5.—Chain saws are effective in felling medium or large brush and in cutting downed material into small pieces for easy handling.

Small Areas

Hand tools—axes, crosscut saws, and power chain saws—can be used to fell a few trees. The most

efficient tool for this purpose is the heavy-duty power chain saw. It can be used to fell trees and to cut fallen trees into small sections for easy removal.

Figure 6.—Some attachments used with crawler tractors to clear medium brush from medium or large areas.

| Attachment | Features | Use |
|---|---|---|
|  Bulldozer Blade | Straight bulldozer blade that can be raised or lowered. Adjustments also permit tilting of blade | Shearing brush at ground level. By raising blade, larger stems can be uprooted. Can also be used to shear off stems slightly below ground. Used also for piling |
|  Land-Clearing B 1 | Modified version of bulldozer blade. Has teeth on bottom-blade edge. Does not carry as much soil to the brush pile as regular bulldozer blade | Knocking over and piling brush. Can also be used to uproot small growth |
|  Tree Cutter | Tension bar and blade. Tension bar bends tree, sharp steel blade slices through tree at ground level | Cutting trees at ground level. Other equipment must be used to pile the brush |
|  Root Cutting Blades | Rear-mounted V-plane cutters. Front-mounted bulldozer blade blazes path for root cutters | Cutting roots of dense underbrush |
|  Anchor Chains or Steel Cables | Anchor chain or steel cable pulled by two tractors | Knocking down and uprooting brush. Two passes are necessary: the first bends the brush, the second uproots it |

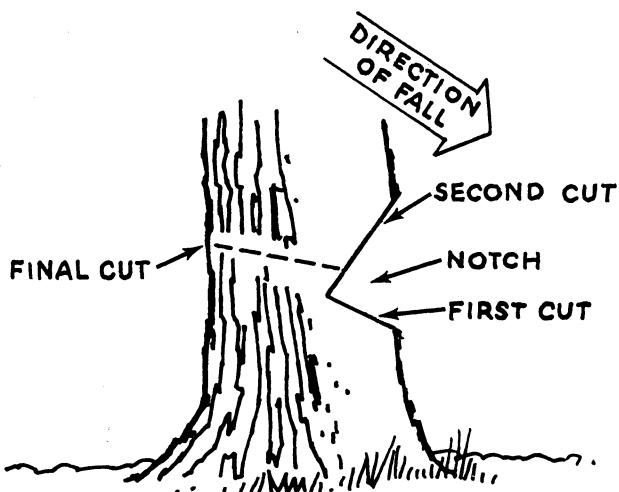


Figure 7.—Method of cutting tree to control direction of fall.

In felling trees, plan your cuts so falling trees will not become entangled in branches of nearby trees (see fig. 7).

If it is desirable to remove a few stumps, you can burn them or pull them out with a tractor.

Medium and Large Areas

Large brush is usually found on deep soils or bottom lands. Hence, large brush is usually cleared from medium or large areas to convert the land to crop use.

Figure 8 describes some common types of land-clearing attachments used with the heavier types of crawler tractors to clear large brush. Custom operators are usually hired to furnish and operate this equipment.

The brush pile should be burned while the clearing operation is in progress. This will save considerable reworking of the burning pile.

If there are ravines or gullies on

the land, the felled material may be pushed into them to help prevent erosion.

BURNING STUMPS

Burning is an easy way to remove a few stumps when tractor power is not available. A homemade stove or Stumpfyre,¹ a chemical mixture, may be used.

The stove is better for dead stumps. To make a stove, remove top and bottom from a 5-gallon paint can or a 55-gallon oil drum; choice between a can or a drum depends on the size of the stump. Punch several 1-inch holes near the bottom of the can or drum to pro-

¹ Mention of a trade name in this publication does not constitute a guaranty or warranty of the product named and does not signify that this product is approved to the exclusion of other comparable products. The name is used solely for the purpose of providing specific information.

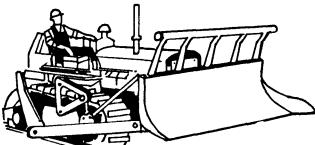
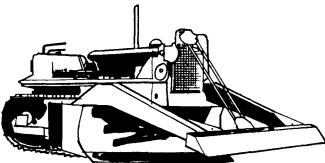
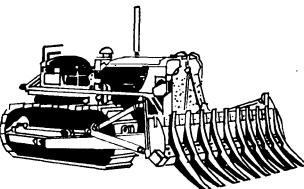
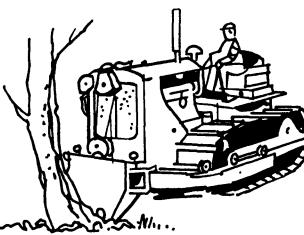
vide a draft. Place stove over stump and build a fire in it. Start fire with kindling wood and then add charcoal, coke, or coal to get a hot fire.

Stumpfyre will burn green or dead stumps. It is applied to a stump in spring and allowed to diffuse through the wood for 2 or 3 months before the stump is fired.

For more information on use of Stumpfyre, write to the Department of Forestry, College of Agriculture, University of Illinois, Urbana, Ill.

Never burn stumps within 10 feet of a building or near flammable material. In some States, it is necessary to get a burning permit from local authorities.

Figure 8.—Some attachments used with crawler tractors to clear large brush from large areas.

| Attachment | Features | Use |
|--|--|---|
|  | Has protruding point (stinger) on blade. Stinger splits large trees into sections for easier shearing or uprooting | Shearing or uprooting trees and brush of all sizes. Piling material for burning |
|  | Independently operated knockdown beam: V-shaped cutting blade. Knockdown beam starts tree over, exposes root system. V-shaped plow rips into roots and tears them free from ground | Uprooting trees. Auxiliary equipment: brush rakes, root rakes |
|  | Curved teeth with heavy-duty caps. Unit can be raised or lowered | Uprooting small trees. Pushing and piling felled material. Removing rocks |
|  | Detachable stumper blade. Force of tractor is concentrated on short blade | Uprooting stumps |

● CHEMICAL CONTROL OF BRUSH

Herbicides, applied with ground or aerial equipment, are recommended for killing brush where it is not necessary to remove the brush immediately. Their use is particularly suited to land that is to be used for rough pasture.

Herbicides are also recommended for controlling regrowth when the tops of brush are removed mechanically.

For information on methods of applying herbicides, see your county agricultural agent or write to the U.S. Department of Agriculture, Washington 25, D.C.

● EROSION CONTROL

Brush-clearing changes the character of the land. This often causes serious erosion problems. For information on principles of soil and water conservation, see your county agricultural agent.